



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/732,958	12/11/2003	Toshiharu Furukawa	ROC920030282US1	9305

30206 7590 06/20/2006

IBM CORPORATION  
ROCHESTER IP LAW DEPT. 917  
3605 HIGHWAY 52 NORTH  
ROCHESTER, MN 55901-7829

EXAMINER

MENZ, DOUGLAS M

ART UNIT	PAPER NUMBER
----------	--------------

2891

DATE MAILED: 06/20/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/732,958

Applicant(s)

FURUKAWA ET AL.

Examiner

Douglas M. Menz

Art Unit

2891

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 3/27/06.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 20-27 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 20-27 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 October 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 20-27 are rejected under 35 U.S.C. 102(b) as being anticipated by Hu et al. (US 6413802).

Regarding claim 20. Hu discloses a portion of a wrap-around-gated field-effect transistor (Figs. 1), the portion comprising:

an silicon-on-insulator (SOI) island (8, Figs. 1) comprising side surfaces forming a periphery and extending, for a length, along a major axis in the horizontal direction;  
and

a gate electrode (Gate, Fig. 1) surrounding and supporting the SOI island, the gate electrode extending in a vertical direction from a handle wafer and having a thickness, in the horizontal direction, less than the length of the SOI island such that a portion of the SOI island extends on one side of the gate electrode and another portion

of the SOI island extends on another side of the gate electrode, the gate electrode extending entirely around the surface periphery of the SOI island (Fig. 1 and Col. 3).

Regarding claim 21, Hu further discloses wherein a first edge face of the SOI island extends outward on one side of the gate electrode (towards Drain Fig. 1) and a second edge face of the SOI island extends oppositely outward on another side of the gate electrode (towards Source, Fig. 1).

Regarding claim 22, Hu further discloses wherein the gate electrode has a cross-sectional profile that is C-shaped (Fig. 1 and Col. 3).

Regarding claim 23, Hu further discloses wherein a portion of a top surface of the SOI island is exposed (Fig. 1).

Regarding claim 24, Hu further discloses wherein at least a portion of the SOI island is supported underneath by an oxide layer (2, Fig. 1 and Col. 3) on the handle wafer.

Regarding claim 25, Hu discloses a field-effect-transistor comprising:

a silicon-on-insulator (SOI) island (8, Fig. 1) comprising a surface periphery and two edge faces, the SOI island oriented substantially in a horizontal direction; a wrap-around gate electrode (Gate, Fig. 1) oriented in substantially a vertical direction

intersecting with the SOI island in-between the two edge faces such that the SOI island, such that the wrap-around gate electrode extends entirely around the surface periphery of the SOI island;

a source region (Source, Fig. 1) formed on a first part of the SOI island, on one side of the gate electrode (Gate, Fig. 1); and

a drain region (Drain, Fig. 1) formed on a second part of the SOI island, on another side of the gate electrode.

Regarding claim 26, Hu further discloses wherein a portion of a bottom surface of the SOI island on both sides of the gate electrode is exposed (Fig. 1).

Regarding claim 27, Hu further discloses wherein at least a portion of the SOI island is supported underneath by an oxide layer (2, Fig. 1).

### ***Response to Arguments***

Applicant's arguments with respect to claims 20-27 have been considered but are moot in view of the new ground(s) of rejection.

### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Douglas M. Menz whose telephone number is 571-272-1877. The examiner can normally be reached on M-F 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bill Baumeister can be reached on 571-272-1722. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

DM

 6/11/06